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Longiflagrum amphibium, a new estuarine apseudomorph tanaid (Crustacea, Peracarida) from north-western Australia

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Abstract

Australian tanaidacean material collected during spring 1993 and 1994 and autumn 1994 and 1995 in vicinity of Port Hedland and Oyster Island (NW Australia) included over 800 of specimens of a new species of apseudomorph, *Longiflagrum amphibium* **sp. n.** The species is the fifth to be described in this genus, and it was found in the intertidal zone, as the other species have been. The new species is distinguished from the other members of the genus by having the shortest flagella in the antennule and by its oval pleopod basis.

Keywords

Longiflagrum, Tanaidacea, Apseudomorpha, NW Australia, intertidal zone

Introduction

The genus *Longiflagrum* was removed from the heterogeneous genus *Apseudes* Leach, 1814 by Guțu (1995) and placed in the family Parapseudidae mainly based on the lack of an apophysis on the coxa of pereopod 1. A further supporting character was the presence of a transverse dorsal row of minute setae on pleonite 1 which is borne by a few

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parapseudid genera, e.g. *Discapseudes* Băcescu and Guțu, 1975, *Pseudoapseudes* Guțu, 1981, *Saltipedis* Guțu, 1995 and *Ctenapseudes* Bamber, Ariyananda and Silva, 1996.

According to Guțu (1995, 1996), *Longiflagrum* is characterized by the equal length of the antennule flagella, by the presence of long setae on article 2 of antennae, at least ten articles in the antennular flagellum, by the broadened carpus of the first pereopod 1, and the wide rami of the pleopods. It currently includes five species including the new one described in the present paper. The characters pinpointed by Guțu (1995) define the genus well and can be accepted with two qualifications. One is the width of the pleopod rami, which can be quite narrow as in the case of *L. caeruleus* (Boesch, 1973); the other is that the flagellum in the antennule can have less than ten articles (*L. koyonense* Angsupanich, 2004).

All five *Longiflagrum* species occur in shallow coastal habitats such as the tidal zone, eelgrass-beds and estuaries where salinity fluctuates in the wide range from 5 up to 34 psu (Boesch 1973; Angsupanich 2004) and they are often recorded as a frequent and abundant element of the soft-bottom ecosystem community (Boesch 1973).

Material and methods

The series of over 800 specimens determined as *Longiflagrum amphibium* sp. n. were collected four times in the Australian spring 1993 and 1994 and autumn 1994 and 1995 in the intertidal zone of Port Hedland (South and North side of Stingray Creek: 20° 20.04′S, 118° 35.230′E – 20°19.31′S, 118° 35.20′E; Burgess Point: 20° 19.28′S, 118° 35.09′E; Stanley Point 20° 19.13′S, 118° 34.03′E; South of West Creek: 20° 19.35′S, 118° 33.26′E and Oyster Inlet: 20° 20.00′S, 118° 28.00′E – 20° 20.31′S, 118° 28.20′E. The material was collected by Halpern, Glick and Maunsell Consulting Company (West Australia).

The type material is deposited in the Museum of Victoria, Melbourne, Australia.

The terminology follows Larsen (2003) and Bamber (2005).

Systematics

Order Tanaidacea Dana, 1849
Suborder Apseudomorpha Sieg, 1980
Superfamily Apseudoidea Leach, 1814
Family Parapseudidae Guțu, 1981

Genus *Longiflagrum* Guțu, 1995

Type species: *Apseudes estuarius* Boesch, 1973.

Species included: *L caeruleus* (Boesch, 1973); *L. estuarius* (Boesch, 1973), *L. koyonense* (Angsupanich, 2004), *L. nasutus* (Nunomura, 2005), *L. amphibium* sp. n.

***Longiflagrum amphibium* sp. n.**
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Figs 1–3

Material examined: All material from Port Headland, Western Australia *Holotype*, female (J59757), Stn Porthed 131 T2, Oyster Inlet (south), 20°20′S, 118°28′E, intertidal, 19 Mar, 1994, coll. Halpern, Glick and Maunsell. *Allotype*, male (J59758), Stn. Porthed 132 T2. *Paratypes*, 5 females (J65137), Stn. Porthed 132 T2; 5 females, 2 males, 1 manca (J 65136); Stn Porthed 131 T2, 11 specimens (J 65139), Stn Porthed 136 T2; 5 specimens (J65137) Stn Porthed 132 T2; all the same locality and data as holotype.

Etymology: The name reflects the attitude of the new species to the intertidal zone.

Diagnosis: Antennular flagella with 8 articles. Antennal flagellum with six articles, article 5 twice as long as wide. Pereopod 1 propodus as long as wide, with four spiniform setae on ventral margin that are 3–4 times as long as wide; pereopod 1 exopod with six setae on distal article. Pereopods 4–6 propodus short, 1.5 times as long as wide. Pleopod basis wide, oval, pleopod endopod twice as long as wide.

Description of female with rudimentary oostegites: (Fig 1 A, B), body 7.4 mm long, 4.3 times as long as wide. Carapace 18% of body length, with rostrum pointed, bent down. Pereonite 1 0.4 times as long as wide, subequal to pereonite 3; pereonite 2 shorter than pereonite 1, 0.3 times as long as wide; pereonites 4 and 5 the longest, both 0.6 times as long as wide; pereonite 6 subequal to pereonite 2. Pleon 25% of total body length; pleonite-1 with dorsal row of minute setae; pleotelson as long as combined length of three pleonites.

Antennule (Fig. 2A) peduncle article 1 2.5 times as long as wide; article 2 half length of article 1, both articles with numerous simple and plumose setae; articles 3 and 4 much shorter, about 0.2 times as long as article 2; flagella subequal, shorter than peduncle, both with eight articles and with numerous, simple setae on both flagella; aesthetascs in number 2, 3, 2 on articles 3, 5 and 7 respectively of main flagellum.

Antenna (Fig. 2B) peduncle article 2 with tooth-like projection and three minute plumose setae; article-3 about twice as long as wide, with six long setae on inner margin; articles 3 and 4 subequal, both as long as wide; article 5 twice as long as wide. Flagellum with six articles. Peduncle articles 3–5 and flagellum first article with long setae on inner margin. Squama with 14 simple setae.

Mouthparts. Left mandible (Fig. 2C) incisor with four spiniform setae; *lacinia mobilis* as big as incisor with four spiniform setae; setiferous lobe with one simple and five long, distally bifurcated/trifurcated setae; molar (Fig. 2C') wide, with some serrated spiniform setae on edge and with row of fine spiniform setae on crushing surface.

Maxillule (Fig. 2F) outer endite with eight spiniform setae distally and two simple setae subdistally, both margins with numerous, minute setae. Inner endite with five thick setose setae. Palp (Fig 2F') with two articles and six distal setae.

Maxilla (Fig. 2E) outer lobe of moveable endite with two setae subdistally and row of serrated setae distally; inner lobe with about ten serrate setae; outer lobe of fixed

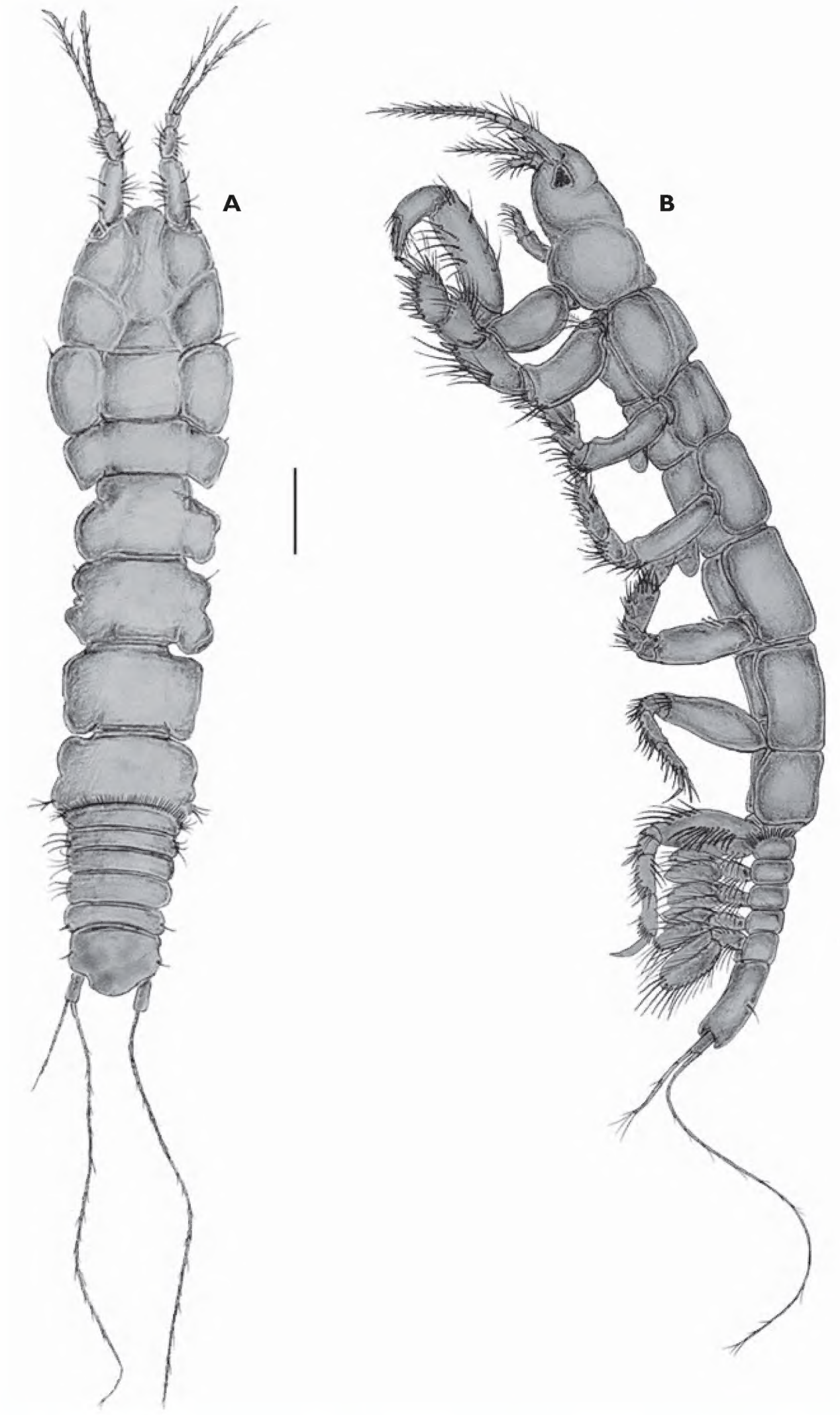

Figure 1. *Longiflagrum amphibium* sp. n. Holotype female. **A** body dorsal view **B** body lateral view. Scale line = 1 mm.

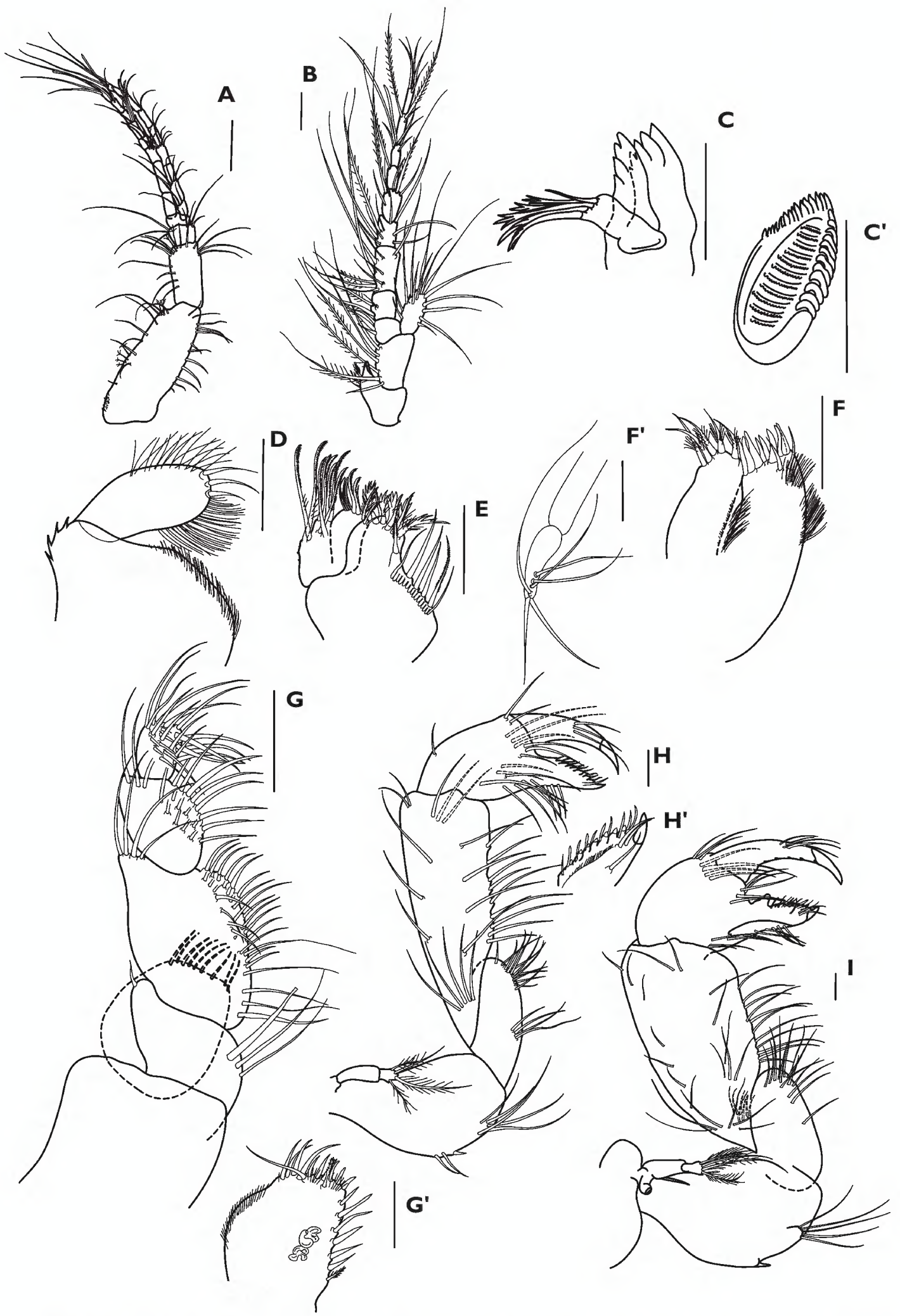

Figure 2. *Longiflagrum amphibium* sp. n. Paratype female. **A** antennule **B** antenna **C** mandible **C'** *pars molaris* **D** labium **E** maxilla **F** maxillule **F'** palp of maxillule **G** maxiliped **G'** maxilipedal endite **H** cheliped **H'** detail of fixed finer. Male **I** cheliped. Scale line = 0.1 mm for A, B, D, F, G', H, I and 0.01 mm for C, C′, E, G.

endite with five leaf-like setae and three thick setose setae; inner lobe of fixed endite with four strong serrate setae and row of plumose setae subdistally.

Labium (Fig. 2D) lobe with minute setation on inner margin and four spines on outer margin.

Palp with numerous, long, minute setae on both margins and three simple setae distally.

Maxilliped (Fig. 2G) basis as long as wide, naked; palp article1 with one small distal, seta on outer margin and three simple, long setae on inner margin; article2 about twice as long as wide, with four long setae distally on outer margin and numerous short and long setae on inner margin; article 3 with three simple setae distally on outer margin and numerous simple setae on inner margin; article 4 with numerous simple setae along inner and distal margin and at middle. Endite (Fig. 2G') with five long setae, and six short spiniform setae distally; inner margin with seven setae and four coupling-hooks.

Cheliped (Fig. 2H) basis narrow proximally, about 1.5 times as long as merus, with two simple setae and spiniform seta ventrally and bunch of five simple setae distoventrally; merus about 0.4 times as long as carpus, with two groups of simple setae ventrally; carpus elongate, 3.5 times as long as wide, with numerous simple setae proximally, ventrally and distally, dorsal margin with row of three (four) setae; propodus subequal in length to dactylus and unguis combined, with one seta dorsally and numerous inner and outer setae near dactylus and ventrally; fixed finger with row of minute spines and serrate setae (Fig. 2H'); dactylus with three simple setae dorsally. Exopod 3 articled, distal article with four feather setae.

Pereopod 1 (Fig. 3A) coxa present, basis wide, narrowed proximally, 3.5 times as long as wide, with spiniform seta and two long setae distoventrally; ischium with five simple setae distoventrally; merus wide, 1.2 times as long as wide with spiniform seta distoventrally and one distodorsally and numerous simple setae on distal half of ventral margin and in mesial row; carpus half as long as wide (expanded dorsal part), with two spiniform setae distoventrally and spiniform seta distodorsally and numerous simple setae on both margins; propodus 1.2 times as long as wide, with four stout spiniform setae ventrally and two spiniform setae distodorsally, which are three to four times as long as wide, and with numerous simple setae on both margin; dactylus and unguis 0.6 times as long as propodus, with one minute seta ventrally. Exopod with three articles, distal article with six plumose setae.

Pereopod 2 (Fig. 3B) coxa naked; basis elongate twice as long as wide, with three simple setae distoventrally (one longer, two shorter); ischium about 0.6 times as long as merus, with three long, and one short simple seta; merus about 0.7 times as long as carpus, with eight simple setae ventrally and group of five simple setae at middle; carpus 1.2 times as long as propodus, with three spiniform setae distoventrally (one small) and numerous simple setae describe the diagonal row; propodus with row of three spiniform and six simple setae ventrally and two spiniform and six simple setae dorsally; dactylus and unguis about as long as propodus, unguis 0.2 times as long as dactylus.

Pereopod 3 (Fig. 3C) similar to pereopod 2, but merus additionally with spiniform seta ventrally, and carpus with seven spiniform setae distoventrally and distodorsally.

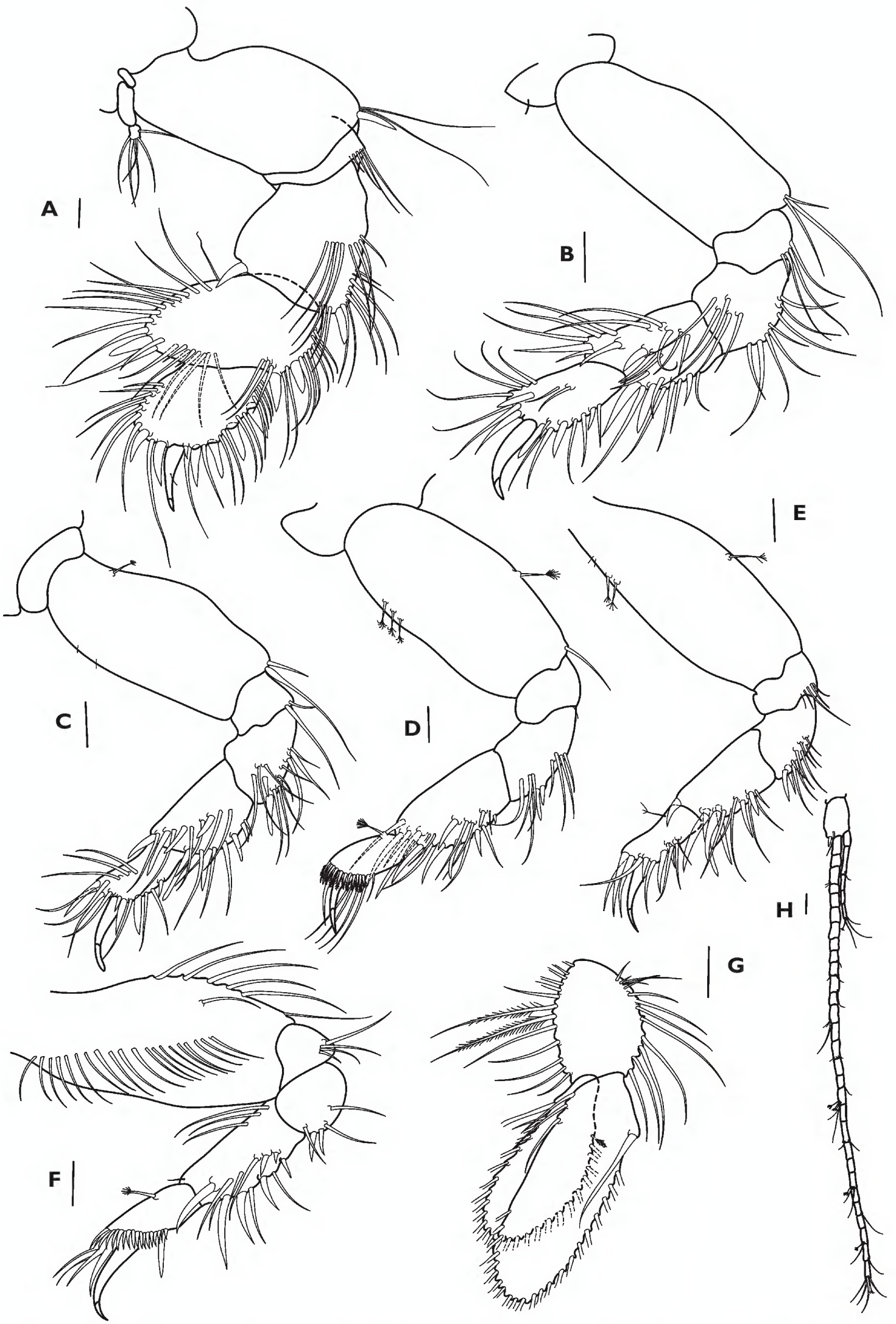

Figure 3. *Longiflagrum amphibium* sp. n. Paratype female. **A** pereopod-1 **B** pereopod-2 **C** pereopod-3 **D** pereopod-4 **E** pereopod-5 **F** pereopod-6 **G** pleopod **H** uropod. Scale line = 0.1 mm

Pereopod 4 (Fig. 3D) basis elongate, subequal in length to ischium, merus and carpus combined, about twice long as wide, with one simple setae distoventrally, three middorsal and one midventral plumose setae; ischium 0.4 times as long as merus, naked; merus 0.7 times as long as carpus, with eight simple setae and two spiniform setae ventrally; carpus 1.5 times as long as propodus, with eight simple and seven spiniform setae ventrally; propodus with one plumose setae dorsally, four simple setae distally and row of short, serrated setae along distal margin; dactylus about 2.5 times as long as unguis.

Pereopod 5 (Fig. 3E) basis elongate, subequal in length to ischium, merus and carpus combined, about twice as long as wide, with two middorsal and one midventral plumose setae; ischium 0.3 times as long as merus, with five short simple setae; merus 0.8 times as long as carpus, with seven simple and three spiniform setae distoventrally; carpus 1.2 times as long as propodus with six simple and five spiniform setae distoventrally and one spiniform seta distodorsally; propodus subequal in length to merus, with plumose seta dorsally, three simple and two spiniform setae ventrally, three simple and two spiniform setae distally; dactylus and unguis combined about as long as propodus.

Pereopod 6 (Fig. 3F) basis elongate, subequal in length to ischium, merus and carpus combined, about twice as long as wide, with seven simple setae ventrally and row of numerous simple setae running from dorsally to middle part of article; ischium triangular, with four simple setae distoventrally; merus 0.6 times as long as carpus, with one simple seta ventrally, two simple and two spiniform setae distoventrally; carpus 1.7 times as long as propodus, with six simple and seven spiniform setae ventrally, three long, simple setae distoproximally; propodus with one plumose seta dorsally and row of numerous, short serrate setae along distal and distoventral margin, one spiniform seta midventrally and four simple setae distally; dactylus and unguis combined little longer than propodus.

Pleopods (Fig. 3G) in five pairs, all similar, basal article 1.8 times as long as wide, with numerous plumose setae along both margins; exopod with numerous plumose setae along outer and distal and innerdistal margin and three setae distoproximally; endopod with numerous simple setae along all margins and one short, feather seta on inner margin. Exopod 0.8 as long as endopod.

Uropod (Fig. 3H) basal article with one small spine and one simple seta. Endopod with 29 articles and sparse short simple and plumose setae. Exopod with five articles, 0.2 times as long as endopod.

Male. Similar to female except for chelipeds (Fig. 2I), which are much robust, especially carpus less than twice as long as wide; fixed finger with additional large tooth near dactylus insertion. Antennule similar to female.

Remarks. Of the five species now in the genus *Longiflagrum, L. amphibium* sp. n. has the shortest antennular flagella, with only eight-articles. The Pacific species, *L. caeruleus*, *L. estuarius* and *L. nasutus* have more than ten articles in both flagella (16/15, 14/12 and 15/11, respectively), while the Indonesian *L. koyonense has* eight to nine in the inner flagellum and 12–13 in the outer one. A trend in reduction in

the number of antennal flagellum articles can be noticed as well, with eleven articles in *L. caeruleus*, nine in *L. estuarius*, seven in both *L. koyonense* and *L. nasutus* and only six in *L. amphibium*.

L. amphibium has wide (almost oval) bases of the pleopods. This article is usually narrow and rectangular or at least square in the other species.

Apart from the shape of the pleopod bases and the articulation of the antennule and antenna, *L. amphibium* is most similar to *L. koyonense*, although that species has a sparsely setose dorsal side to the cheliped carpus and more (14) setae in the squama. Also *L. koyonense* has a relatively short (1.5 times as long as wide) fifth article in the antennal peduncle, which is twice as long as wide in all other species except for *L. caeruleus* in which this article is only as long as wide.

Males of *Longiflagrum* are recognizable by the shape of the chela. The new species is the only one without a proximal spiniform seta on the ventral margin of the cheliped dactylus. This structure is very prominent in *L. koyonense*, *L. nasustus*, *L. estuarius*, and small, but clear in *L. caeruleus*.

Distribution. The species is known only from the type locality (Port Hedland, NW Australia), from the tidal depth.

Key to both sexes of the species of *Longiflagrum*

1	Antennule outer flagellum with eight articles ..... ***L. amphibium* sp. n.**
–	Antennule outer flagellum with more than 10 articles..... **2**
2	Flagellum of the antenna with more than 10 articles..... **3**
–	Flagellum of the antenna with less than 10 articles..... **4**
3	Antenna article 5 short (as long as wide); spiniform setae of the propodus of pereopod 1 large (more than five times as long as wide) ..... ***L. caeruleus***
–	Antenna article 5 long (twice as long as wide); spiniform setae of the propodus of pereopod 1 short (about three times as long as wide)..... ..... ***L. estuarius***
4	Pereopods 3–4 carpus short (about 1.5 times as long as wide) .. ***L. koyonense***
–	Pereopods 3–4 carpus long (about three times as long as wide) .... ***L. nasutus***

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